52. A method for regulating cytokine production, inducing nitrogen monoxide production, suppressing allergy, or suppressing IgE production, which comprises administering an effective amount of the cosmetic composition of claim 48 to a subject in need thereof for regulating cytokine production, inducing nitrogen monoxide production, suppressing allergy, or suppressing IgE production.--

REMARKS

Status of the Claims

Claims 1-27 are cancelled without prejudice or disclaimer of the subject matter contained therein. Claims 28-52 are added. Claim 28 corresponds to cancelled claim 22, wherein the limitation related to fucoidan is amended to "fucoidan derived from *Kjellmaniella crassifolia*." Support for this phrase is found on page 8, line 6 of the specification. Claims 29-32 correspond to cancelled claims 24-27. Claim 33 corresponds to cancelled claim 16, wherein the limitation related to fucoidan is amended to "fucoidan derived from *Kjellmaniella crassifolia*." Claims 34-38, which depend from claim 33, correspond to

cancelled claims 3-7. Claim 39 corresponds to cancelled claim 20, wherein the limitation related to fucoidan is amended to "fucoidan derived from *Kjellmaniella crassifolia*." Claims 40-42, which depend from claim 39, correspond to cancelled claims 3-5. Also, an embodiment in which food, drink or feed containing the fucoidan and/or a degradation product thereof as an effective ingredient is recited as a claim 43. In addition, an embodiment in which a cosmetic containing the fucoidan and/or a degradation product thereof as an effective ingredient is recited in claim 44. Claims 43 and 44 depend from claim 39, respectively. Claims 45 and 46 are supported by claim 28 and the description on page 22 of the specification. Claims 47-48 are supported by the description on page 36 of the specification. Claims 49-52 are supported by the above-mentioned portions of the specification supporting claims 33, 39, 45 and 48.

Claim Objections

Claims 3-5, 7, 8 and 10 are objected to as being substantial duplicates of claim 1 for the reasons set forth in the second full paragraph on page 2 of the Office Action. This rejection is moot in view of the cancellation of claims 1, 3-5, 7, 8 and 10.

Obviousness-Type Double Patenting Rejections

Claims 22 and 24-27 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claim 1 of copending Application No. 10/148,486 (US 2002/0039670) for the reasons in the last paragraph on page 2 of the Office Action. Claims 8 and 10-13 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claim 9 of copending Application No. 10/148,486 (US 2002/0039670) for the reasons on pages 3-4 of the Office Action. These rejections are respectfully traversed. Reconsideration and withdrawal thereof are requested.

These rejections are believed to be moot, in part, in view of the cancellation of claims 8 and 10-13. However, with respect to claims 22 and 24-27, corresponding to claims 28-32, the Examiner is respectfully requested to hold these rejections in

abeyance until one of the applications is allowed in accordance with PTO procedures. See MPEP 804 at page 800-19.

Rejection Under 35 U.S.C. 101

Claims 14, 15, 18, 19 and 21 are rejected by the Examiner under 35 U.S.C. 101 for the reasons set forth in the last paragraph on page 4 through the first paragraph on page 5 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

This rejection is moot in view of the cancellation of claims 14, 15, 18, 19 and 21.

Rejection Under 35 U.S.C. 112, Second Paragraph

Claims 14, 15, 18, 19 and 21 are rejected by the Examiner under 35 U.S.C. 112, second paragraph, for the reasons set forth in the last two paragraphs on page 5 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

This rejection is moot in view of the cancellation of claims 14, 15, 18, 19 and 21.

Rejection of Claims 1-13, 15, 17-19 Under 35 U.S.C. 102(e) Over Umeda et al.

Claims 1-13, 15 and 17-19 are rejected by the Examiner under 35 U.S.C. 102(e) over Umeda et al. for the reasons set forth on page 6 through the first two lines on page 7 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

This rejection is moot in view of the cancellation of claims 1-13, 15 and 17-19.

Rejection of Claims 22-27 Under 35 U.S.C. 102(a) Over TAKO (WO 99/01478)

Claims 22-27 are rejected by the Examiner under 102(a) over TAKO (WO 99/01478) for the reasons set forth on page 7 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Cancelled claims 22-27 correspond to claims 28-32, wherein the limitation previously relating to fucoidan is clarified to be directed to a fucoidan derived from *Kjellmaniella crassifolia*. That is, claim 28 relates to a cosmetic for regulation of cytokine production, induction of nitrogen monoxide production, or anti-allergy, characterized in that the cosmetic comprises as

an effective ingredient a fucoidan derived from *Kjellmaniella crassifolia* and/or a degradation product thereof.

The TAKO reference only discloses applicability for a cosmetic of acetylfucoidan derived from *Cladosiphon okamuranus TOKIDA*. Specifically, the Examiner's attention is directed to the section labelled TECHNICAL FIELD on page 1, lines 6-12 of the TAKO reference, which is reproduced for the Examiner's convenience as follows:

"TECHNICAL FIELD

This invention relates to a technique for conveniently preparing novel, high-purity acetylfucoidan containing acetic acid, derived from natural or cultured *Cladosiphon okamuranus TOKIDA*, which can be utilized as ... cosmetics, biotechnologies and other industrial use."

The Examiner should note that fucoidan derived from *Kjellmaniella crassifolia* is different than acetylfucoidan derived from *Cladosiphon okamuranus TOKIDA*, so that the inventions of claims 28-32 are fundamentally different from the invention disclosed in the TAKO reference. Accordingly, the rejection over the TAKO reference (WO 99/01478) for the reasons set forth on page 7 of the Office Action should be withdrawn by the Examiner.

Moreover, the Examiner should note that an embodiment in which a cosmetic containing the fucoidan and/or a degradation product thereof as an effective ingredient is recited in claim 44, which depends from claim 39. However, since the fucoidan of the claim 44 is a fucoidan derived from *Kjellmaniella crassifolia*, the invention of the claim 44 cannot be anticipated by the teachings of the TAKO reference.

Rejection of Claims 14, 16, 20 and 21 Under 35 U.S.C. 102(e) Over Parish et al.

Claims 14, 16, 20 and 21 are rejected by the Examiner under 102(e) over Parash et al. for the reasons set forth on page 7 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Claims 14 and 21 are canceled. Also, the fucoidan in claim 33 corresponding to cancelled claim 16 and in claim 39 corresponding to cancelled claim 20 is a fucoidan derived from *Kjellmaniella crassifolia*.

The Examiner points out on page 7 of the outstanding Office Action that "PARISH teaches that administration of fucoidan can prevent experimental allergic encephalomyelitis, . . ." However,

as shown in Example 6 of the present specification, fucoidan has different structures depending upon its derivation, so that it is evident that their activities are different. Therefore, the action of the fucoidan derived from *Kjellmaniella crassifolia* cannot be anticipated by the above description.

Moreover, the Parish et al. reference only specifically describes the examination of antimetastatic and anticoagulant effects for the fucoidan derived from *Fucus vesiculosus* (See column 3, lines 9-10 and Example 1 of the Parish et al. reference). However, fucoidan derived from *Kjellmaniella crassifolia* of the inventions recited in claims 33 and 39 is clearly different than the fucoidan derived from *Fucus vesiculosus* of the Parish et al. reference. Therefore, the inventions of claims 33 and 39 cannot be anticipated by the teachings of the Parish et al. reference. Accordingly, the rejection of claims 14, 16, 20 and 21 under 102(e) over Parash et al. for the reasons set forth on page 7 of the Office Action should be withdrawn by the Examiner.

Rejection of Claims 14, 16, 20 and 21 Under 35 U.S.C. 102(a) Over Granert et al.

Claims 14, 16, 20 and 21 are rejected by the Examiner under 35 U.S.C. 102(a) as being anticipated by Granert et al. for the reasons set forth on pages 7-8 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Claims 14 and 21 are canceled and the rejection of these claims is thus moot.

Claim 33 relates to a method of treating or preventing a disease requiring regulation of cytokine production, a disease requiring nitrogen monoxide production, or an allergic disease, wherein the method comprises administering a fucoidan derived from *Kjellmaniella crassifolia* and/or a degradation product thereof. Claim 39 relates to a method for regulating cytokine production, inducing nitrogen monoxide production, suppressing allergy, or suppressing IgE production, wherein a fucoidan derived from *Kjellmaniella crassifolia* and/or a degradation product thereof is used as an effective ingredient.

Accordingly, the recitation of fucoidan in claims 33 and 39, corresponding to cancelled claims 16 and 20, respectively, relates to fucoidan derived from *Kjellmaniella crassifolia*.

In contrast to the claimed invention, Granert et al. specifically describes that fucoidan manufactured by Sigma Chemical Co., Ltd, St. Louis, MO (page 2072, left column, line 18) inhibits the release of TNF-α and IL-1 (see for instance, Table 1.). Applicants have studied how the fucoidan manufactured by Sigma Chemical Co., Ltd, St. Louis, MO is derived. As a result, Applicants deduced that the fucoidan of the Granert et al. reference is derived from *Fucus vesiculosus*. Applicants' evidence in support of this conclusion is Sigma's own publication. In this regard, the Examiner's attention is directed to the attached copy of the Catalog of 2000 Sigma Chemical Co., Ltd. listing their fucoidan. Applicants also provide a printout of the portion of Sigma's Catalog explaining their fucoidan. This information is obtained from Sigma's home page.

As a result, it is readily apparent that fucoidan derived from *Kjellmaniella crassifolia* of the present invention as recited in claims 33 and 39 is clearly different from fucoidan derived from *Fucus vesiculosus*. Therefore, the inventions recited in claims 33 and 39 are not anticipated by the teachings of the cited Granert et al. reference. Accordingly, the rejection of the claims over the Granert et al. reference should be withdrawn by the Examiner.

Rejection of Claims 14, 16, 20 and 21 Under 35 U.S.C. 102(b) Over KYODO NYUGYO KK (Japanese Patent Laid-Open No. 10-72362 (JP'362))

Claims 14, 16, 20 and 21 are rejected by the Examiner under 35 U.S.C. 102(b) as being anticipated by Kyodo Nyugyo KK for the reasons set forth on page 8 of the Office Action. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Claims 14 and 21 are canceled. Also, the fucoidan recited in claims 33 and 39 corresponding to cancelled claims 16 and 20, respectively, relates to fucoidan derived from *Kjellmaniella crassifolia*.

The Examiner points out on page 8 of the outstanding Office Action that "KYODO NYUGYO KK teaches that administration of fucoidan can treat or prevent allergic disease and can suppress production of interleukin 4,. . ." However, the JP'362 reference only describes the function of fucoidan derived from *Laminaria diabolica*. Specifically, the JP '362 reference describes in paragraph [0008] thereof the following:

"[0008]
[Modes for Carrying out the Invention]
A. Method for Preparing Fucoidan and Fucoidan-Like Polysaccharide
Dry *Laminaria diabolica* is thinly sliced with scissors or the like, and 5-times by volume of deionized water is added thereto, and thereafter the mixture was heat-treated at 121°C for 15 minutes. The extract was made clear by centrifugation or filtration method, and then lyophilized. The lyophilized product was purified by ion-exchanged chromatography using DEAE Cellulofine (Seikagaku Kogyo), and each of the substances were identified by contents of fucose, uronic acid and sulfuric acid, and electrophoresis."

In contrast to the teachings of the JP '362 reference, fucoidan derived from *Kjellmaniella crassifolia* as recited in claims 33 and 39 is different from fucoidan derived from *Laminaria diabolica* of JP'362. Therefore, the inventions as recited in claims 33 and 39 are not anticipated by the teachings

of the JP '362 reference. Accordingly, the rejection of the claims over the JP '362 reference should be withdrawn by the Examiner.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one month extension of time for filing a reply in connection with the present application, and the required fee of $110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

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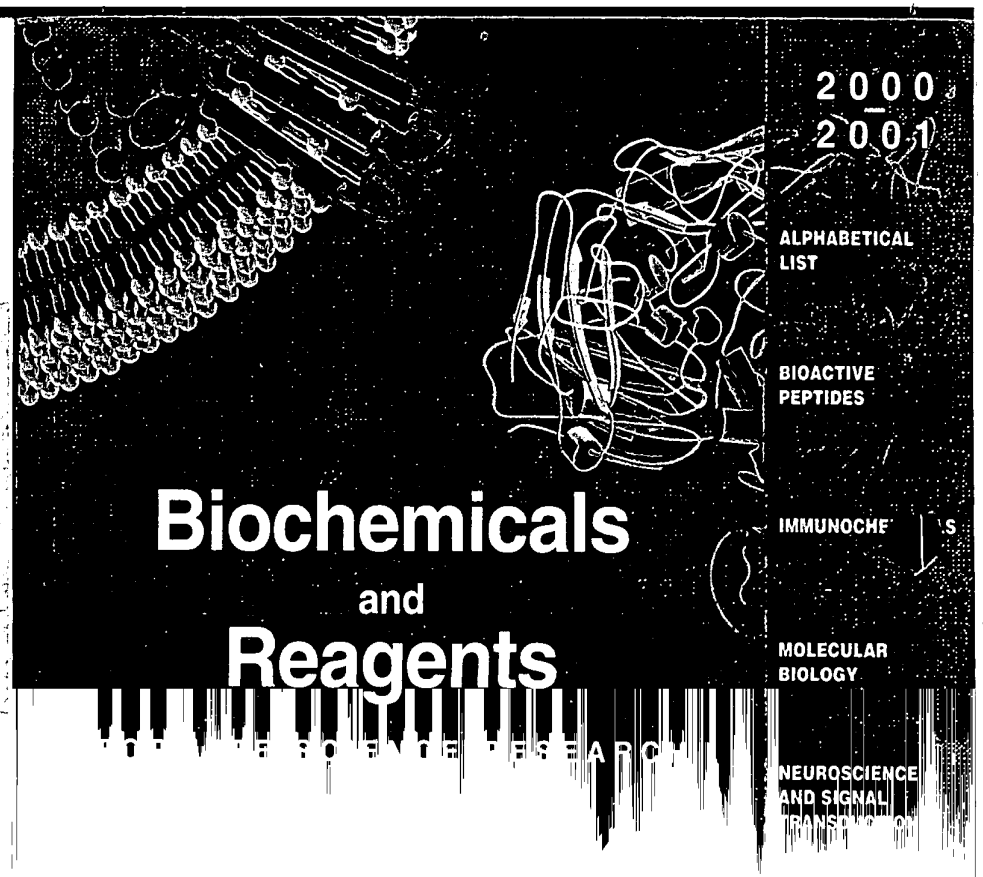

2000
2001
ALPHABETICAL LIST
BIOACTIVE PEPTIDES
IMMUNOCHE S
MOLECULAR BIOLOGY
NEUROSCIENCE AND SIGNAL
Biochemicals
and
Reagents

ALPHABETICAL LIST OF COMPOUNDS

F

PRODUCT NUMBER | US $

(Continuation of)
D-FRUCTOSE 1-PHOSPHATE

F 1002 [-0°C] **Di(cyclohexylammonium) Salt** 250 mg 77.60
Crystalline
97-99%
[103213-45-2] $C_6H_{13}O_9P \cdot 2C_6H_{13}N$ FW 458.5
R: 36/37/38 S: 26-36

F 1127 [-0°C] **Sodium Salt** 100 mg 39.00
Minimum 95% 500 mg 129.10
Amorphous 1 g 215.00
[103213-46-3] $C_6H_{11}O_9PNa_2$
FW 304.1
R: 36/37/38 S: 26-36

D-FRUCTOSE 6-PHOSPHATE

F 6134 [-0°C] **Barium Salt** 2 g 17.60
Amorphous 5 g 41.00
Practical: Approx. 60% by enzymatic analysis (glucose-6-phosphate dehydrogenase and phosphoglucose isomerase). Contains approx. 5% glucose 6-phosphate and approx. 1% fructose 1,6-diphosphate. 25 g 148.00
[6035-54-7] $C_6H_{11}O_9PBa$ FW 395.5
R: 20/22 S: 28

F 3627 [-0°C] **Disodium Salt** 100 mg 12.70
Approx. 98% (enzymatic assay) 500 mg 26.30
Amorphous 1 g 43.70
Contains less than 1 mole % glucose 6-phosphate and less than 0.05 mole % fructose 1,6-diphosphate. 5 g 173.10
[26177-86-6] $C_6H_{11}O_9PNa_2$ FW 304.1
R: 23/24/25-36/37/38 S: 45-24-36

F 1502 [-0°C] **Dipotassium Salt** 500 mg 29.80
Approx. 98% (enzymatic assay) 1 g 49.40
Amorphous
Contains less than 1 mole % glucose 6-phosphate and less than 0.05 mole % fructose 1,6-diphosphate.
[103213-47-4] $C_6H_{11}O_9PK_2$ FW 336.3
R: 23/24/25-36/37/38 S: 45-26-36-22

D-FRUCTOSE 6-PHOSPHATE-UL-^{14}C
See: Radiochemicals Section *Page 2136*

FRUCTOSE-6-PHOSPHATE KINASE
(6-Phosphofructokinase; ATP: D-fructose 6-phosphate 1-phosphotransferase; EC 2.7.1.11)
Unit Definition: One unit will convert 1.0 µmole of fructose 6-phosphate and ATP to fructose 1,6-diphosphate and ADP per minute at pH 8.0 at 37°C, unless otherwise indicated.

F 2129 [2-8°C] **Type IV: From Rabbit Muscle** 25 units 76.90
Insoluble enzyme attached to beaded agarose.
Suspension in 2.0 M $(NH_4)_2SO_4$, 0.004 M ATP, 0.05 M β-glycerophosphate, 0.001 M dithiothreitol, 0.002 M EDTA, pH 7.0.
Activity: 300-900 units per gram of agarose at pH 8.0 at 30°C. One ml gel will yield 10-30 units.

(Continued)

PRODUCT NUMBER | US $

(Continuation of)
FRUCTOSE-6-PHOSPHATE KINASE

F 8134 [-0°C] **Type VI: From Rabbit Liver** 5 units 224.30
Lyophilized powder containing approx. 2% protein (Lowry), 1% ATP, 5% dithiothreitol, 10% $(NH_4)_2SO_4$; balance primarily stabilizers.
Activity: 5-20 units per mg protein (Lowry).
Unit Definition: One unit will convert 1.0 µmole of fructose 6-phosphate and ATP to fructose 1,6-diphosphate and ADP per minute at pH 8.0 at 30°C in a coupled system with aldolase, glycerophosphate dehydrogenase and triosephosphate isomerase.
Note: The enzyme from skeletal muscle is reported to be up to 50 times more active than the liver enzyme and differs significantly in regulatory properties.
Ref.: Kemp, R.G., J. Biol. Chem., **246**, 245 (1971).
[9001-80-3]
R: 36/37/38 S: 26-36

F 0137 [-0°C] **Type VII** 100 units 41.70
From Bacillus stearothermophilus 250 units 91.20
Lyophilized powder containing phosphate buffer salt.
Activity: Minimum 50 units per mg protein at pH 9.0 at 30°C.
[9001-80-3]

FRUCTOSE-6-PHOSPHATE KINASE, Pyrophosphate dependent
(6-Phosphofructokinase(pyrophosphate); Pyrophosphate: D-Fructose 6-phosphate 1-phosphotransferase; EC 2.7.1.90)
The three pyrophosphate-dependent fructose-6-phosphate kinases listed below differ in their response to the presence of the physiological activator fructose 2,6-diphosphate [Fru (2,6)-P_2]. The enzyme from Propionibacterium freudenreichii (F 8381) reportedly is not affected by Fru (2,6)-P_2[1]. The enzymes from mung bean (F 8757) and from potato tubers (F 2258) are similar, but not identical, in their response to Fru (2,6)-P_2. Although the total magnitude of the stimulation by Fru (2,6)-P_2 is greater for the mung bean enzyme, the activation of the potato tuber enzyme is detectable at approx. one-tenth the concentration of Fru (2,6)-P_2 required to stimulate the mung bean enzyme (half-maximal activation at 5.5 nM Fru (2,6)-P_2 for potato tuber enzyme[1]; 50 nM Fru (2,6)-P_2 for mung bean enzyme[2]).
Ref.: 1. VanSchaftingen, E., et al., Eur. J. Biochem., **129**, 191 (1982).
2. Sabularse, D.C. and Anderson, R.L., Biochem. Biophys. Res. Commun., **103**, 848 (1981).
[55326-40-4]

F 8757 [-0°C] **From Mung Bean** 5 units 94.60
Lyophilized powder containing approx. 40% protein (Biuret); balance imidazole salts and stabilizer.
Activity: 5-20 units per mg protein.
Unit Definition: One unit will convert 1.0 µmole of pyrophosphate and fructose 6-phosphate to fructose 1,6-diphosphate and inorganic phosphate per min at pH 7.6 at 30°C, in a coupled system with aldolase, α-glycerophosphate dehydrogenase, triosephosphate isomerase and 1 µM fructose 2,6-diphosphate.

(Continued)

PRODUCT NUMBER | US $

(Continuation of)
FRUCTOSE-6-PHOSPHATE KINASE, Pyrophosphate dependent

F 2258 [-0°C] **From Potato Tubers** 1 unit 39.70
Lyophilized powder containing approx. 30% protein (Lowry); balance primarily sodium phosphate buffer and stabilizers with traces of inorganic pyrophosphate and dithiothreitol. 5 units 163.80
Activity: Minimum 2 units per mg protein (Lowry). 10 units 272.90
Unit Definition: One unit will convert 1.0 µmole of pyrophosphate and fructose 6-phosphate to fructose 1,6-diphosphate and inorganic phosphate per min at pH 8.0 at 30°C in the presence of 1 µM fructose 2,6-diphosphate and 17 mM glucose 6-phosphate, in a coupled assay system using aldolase, α-glycerophosphate dehydrogenase, and triosephosphate isomerase.

F 8381 [-0°C] **From Propionibacterium freudenreichii (shermanii)** 1 unit 22.20
Lyophilized powder containing approx. 15% protein (Biuret); balance primarily imidazole salts and stabilizer. 5 units 94.60
Activity: 4-8 units per mg protein. 10 units 150.50
Unit Definition: One unit will convert 1.0 µmole of pyrophosphate and fructose 6-phosphate to fructose 1,6-diphosphate and inorganic phosphate per min at pH 7.4 at 30°C, in a coupled system with aldolase, glycerophosphate dehydrogenase and triosephosphate isomerase.
Suitable for the determination of enzymatically generated pyrophosphate or the quantitation of pyrophosphate using the method of O'Brien, W., Anal. Biochem., **76**, 423 (1976).
See also: Pyrophosphate Reagent *Page 861*

FRUITFLY DIET
See: Tissue Culture Media and Reagents *Page 1793*

FTASE (FARNESYLTRANSFERASE) INHIBITOR
See: Cys-Val-2-Nal-Met under Bioactive Peptides *Page 1086*

FTORAFUR
See: 5-Fluoro-1-(tetrahydro-2-furfuryl)uracil *Page 431*

FUCHSIN, ACID

F 8129 [RT] (C.I. 42685; Acid Violet 19) 25 g 23.90
Dye content: Approx. 70% 50 g 42.90
See also: Acid Fuchsin, Certified 100 g 74.90
Page 45
[3244-88-0] $C_{20}H_{17}N_3O_9S_3Na_2$ FW 585.5
R: 36/37/38 S: 26-36

FUCHSIN, BASIC
See: Pararosaniline *Page 748*

FUCHSIN, NEW
See: New Fuchsin *Page 703*

L-FUCITOL

F 1520 [RT] (6-Deoxy-L-galactitol) 250 mg 22.70
[13074-06-1] $C_6H_{14}O_5$ FW 166.2

FUCOIDAN

F 5631 [RT] (Fucoidin) 500 mg 23.20
Crude; from Fucus vesiculosus 1 g 37.80
A polysaccharide composed predominantly of sulfated fucose. 5 g 117.80
Prepared by a modification of the method of Black, W.A.P., et al., J. Sci. Food Agri., **3**, 122 (1952).
[9072-19-9]

PRODUCT NUMBER | US $

6-O-α-L-FUCOPYRANOSYL-N,N'-DIACETYLCHITOBIOSE

F 0774 [2-8°C] (β-D-GlcNAC-[1→4]-(α-L-Fuc-[1→6])-D-GlcNAc) 1 mg 119.30
Part of the oligosaccharide structure of the N-linked carbohydrate side-chain of glycoproteins.
Ref.: Lee, H.H., et al., Can. J. Chem., **68**, 953 (1990).
[79365-98-3] $C_{22}H_{38}N_2O_{15}$ FW 570.5

2-O-α-L-FUCOPYRANOSYL-D-GALACTOSE
See: 2-O-α-L-Fucosyl-D-Galactose *Page 442*

α-L-FUCOPYRANOSYLPHENYL ISOTHIOCYANATE

F 4261 [2-8°C] (Isothiocyanatophenyl α-L-fucopyranoside) 5 mg 54.70
Suitable for use in preparation of neoglycoproteins.
Ref.: Monsigny, M, et al., Biol. Cell, **51**, 187 (1984).
[95344-14-2] $C_{13}H_{15}NO_5S$ FW 297.3

β-L-FUCOPYRANOSYLPHENYL ISOTHIOCYANATE

F 8524 [2-8°C] (Isothiocyanatophenyl β-L-fucopyranoside) 10 mg 66.60
Suitable for the preparation of neoglycoproteins.
Ref.: Monsigny, M., et al., Biol. Cell., **51**, 187 (1984).
[142702-33-8] $C_{13}H_{15}NO_5S$ FW 297.3

D(+)FUCOSE

F 8150 [RT] (6-Deoxy-D-galactose) 500 mg 29.90
Approx. 98% 1 g 49.70
[3615-37-0] $C_6H_{12}O_5$ FW 164.2 5 g 165.50

L(−)FUCOSE

F 2252 [RT] (6-Deoxy-L-galactose) 1 g 15.00
Minimum 99% 5 g 49.70
[2438-80-4] $C_6H_{12}O_5$ FW 164.2 25 g 193.10
100 g 623.30

L-FUCOSE-AGAROSE
See under: Affinity Chromatography Media *Page 1931*

L-FUCOSE-[5,6-^{3}H]
See: Radiochemicals *Page 2136*

L-FUCOSE DEHYDROGENASE

F 0547 [-0°C] (6-Deoxy-L-galactose: NADP 1-oxidoreductase) 25 units 88.90
From Pseudomonas sp., Recombinant, expressed in E. coli
Lyophilized powder
Activity: Minimum 10 units per mg solid
Unit Definition: One unit will oxidize 1.0 µmole of L-fucose to L-fucono-1,5-lactone per min at pH 9.5 at 37°C in the presence of NADP.
[89511-98-8]

α-L-(−)-FUCOSE 1-PHOSPHATE

F 1759 [-0°C] **Di(cylohexylammonium) Salt** 10 mg 23.60
Approx. 99% 100 mg 159.70
[24333-03-7] $C_6H_{11}O_6P \cdot 2C_6H_{14}N$ FW 442.5

β-L-FUCOSE 1-PHOSPHATE

F 1395 [-20°C] (6-Deoxy-β-L-galactose phosphate) 10 mg 95.90
Synthetic 50 mg 379.00
Di(cyclohexylammonium) Salt
Minimum 98%
[28553-11-9] $C_6H_{11}O_6P \cdot 2C_6H_{14}N$ FW 442.5

α-FUCOSIDASE

F 8899 [-20°C] (EC 3.2.1.111) 1 vial 145.60
From Almond Meal
Lyophilized powder containing sodium acetate and BSA.
Vial contains 20 µunits.
Unit Definition: One unit will liberate 1.0 µmole of fucose from lacto-N-fucopentaose II per min at pH 5.0 at 37°C.
Not assayed by Sigma.
[9037-65-4]

Product Number:**F5631**

Product Name:**Fucoidan from Fucus vesiculosus**

Register or Login for Pricing Click Here

Product Information
Description
Certificate of Analysis
Certificate of Origin
MSDS
Options
Print Preview
Bulk Quote
Ask A Scientist

Synonyms: Fucoidin

MDL number: MFCD00131109

CAS Number: 9072-19-9

MDL Number: MFCD00131109

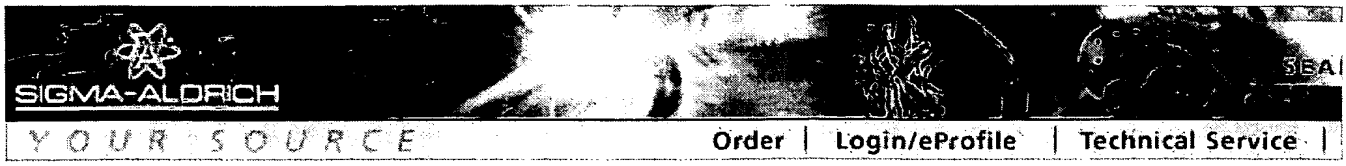
Storage Temp: RT

Comments:

A polysaccharide composed predominantly of sulfated fucose.

Quality note: Crude

Prepared by a modification of the method of Black, W.A.P., et al., J. Sci. Food Agri., 3, 122 (1952).



Product Number:**47865**

Product Name:**Fucoidan from Fucus vesiculosus**

Register or Login for Pricing Click Here

Product Information
Description
Certificate of Analysis
MSDS
Options
Print Preview
Bulk Quote
Ask A Scientist

Synonyms: Fucoidin

MDL number: MFCD00131109

CAS Number: 9072-19-9

MDL Number: MFCD00131109

Assay: 9-10% as sulfur

Literature References:

1. R.M. Williams, R. Jones, *FEBS Lett.* **270**, 168 (1990)

Comments:
BioChemika, 9–10% as sulfur
polysaccharide, consists predominantly of sulfated L–fucose
Probe of polysaccharide binding to proacrosin
by a modification of the procedure of W.A.P. Black et al., J.Sci.Food.Agr. 3, 122 (1952)

Extended specifications	
Water	≤15%
Na	7-8%

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